



B/p

The
Patent
Office

PCT/GB 99 7 0 1 1 4 6



The Patent Office FOR THE PEOPLE
Concept House
Cardiff Road
Newport
South Wales
NP9 1RH

Ch
[Signature]

REC'D 19 MAY 1999

WIPO PCT

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

**PRIORITY
DOCUMENT**

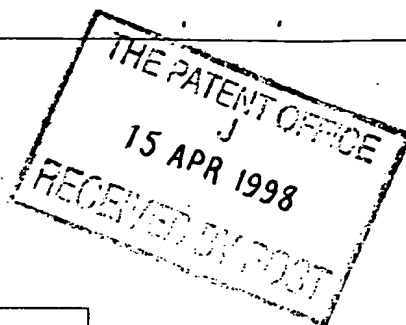
SUBMITTED OR TRANSMITTED IN
COMPLIANCE WITH RULE 17.1(a) OR (b)

Signed

Dated

7 May 1999

For official use



15 APR 1998

9807861.1

CLASSIFICATION 1 300515
FEE 7700 25.00 - 9807861.1

Your reference
P54899/JEP

Notes

Please type, or write in dark ink using CAPITAL letters. A prescribed fee is payable for a request for grant of a patent. For details, please contact the Patent Office (telephone 071-438 4700).

16 of the Patents Rules 1990 is the main rule governing the completion and filing of this form.

2 Do not give trading styles, for example, 'Trading as XYZ company', nationality or former names, for example, 'formerly (known as) ABC Ltd' as these are not required.

Warning

For an application for a Patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977 and will inform the applicant if such prohibition or restriction is necessary. Applicants resident in the United Kingdom are also reminded that under Section 23, applications may not be filed abroad without written permission unless an application has been filed not less than 6 weeks previously in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction revoked.

The
Patent
Office

Request for grant of a Patent Form 1/77

Patents Act 1977

1 Title of invention

1 Please give the title of the invention

IMPROVEMENTS IN FABRIC
COMPOSITES

2 Applicant's details

☐ First or only applicant

2a If you are applying as a corporate body please give:

Corporate name

PRO-FIT INTERNATIONAL LIMITED

Country (and State of incorporation, if appropriate)

UK

2b If you are applying as an individual or one of a partnership please give in full:

Surname

Forenames

2c In all cases, please give the following details:

Address

CRIMPLE LODGE
FULWITH MILL LANE
HARROGATE

UK postcode HG2 8HJ
(if applicable)

Country UK

ADP number
(if known)

1417900001

2d, 2e and 2f:

If there are further applicants
please provide details on a separate
sheet.

☐ Second applicant (if any)

2d If you are applying as a corporate body please give:

Corporate name

Country (and State of incorporation, if appropriate)

2e If you are applying as an individual or one of a partnership please give in full:

Surname

Forenames

2f In all cases, please give the following details:

Address

UK postcode
(if applicable)

Country

ADP number
(if known)

3

An address for service in the United
Kingdom must be supplied.

Please mark correct box

3 Address for service details

3a Have you appointed an agent to deal with your application?

Yes ☒ No ☐ → go to 3b

↓
Please give details below

Agent's name

URQUHART - DYKES & LORD

Agent's address

INVENTIONS HOUSE

VALLEY COURT

CANAL ROAD

BRADFORD

Postcode BD1 4SP

Agent's ADP number 1644023 ✓

3b:

If you have appointed an agent,
all correspondence concerning
your application will be sent to
the agent's United Kingdom
address.

3b If you have not appointed an agent please give a name and address in the United
Kingdom to which all correspondence will be sent:

Name

Address

Postcode
ADP number
(if known)

Daytime telephone
number (if available)

P54899/JEP

Please mark correct box

5 Are you claiming that this application be treated as having been filed on the date of filing of an earlier application?

Yes ☐ No ☒ **➡ go to 6**



please give details below

☐ number of earlier application or patent number

 filing date

(day month year)

☐ and the Section of the Patents Act 1977 under which you are claiming:

Please mark correct box

15(4) (Divisional) ☐ 8(3) ☐ 12(6) ☐ 37(4) ☐

If you are declaring priority from a PCT Application please enter 'PCT' as the country and enter the country code (for example, GB) as part of the application number.

Please give the date in all number format, for example, 31/05/90 for 31 May 1990.

6 If you are declaring priority from previous application(s), please give:

Country of filing	Priority application number (if known)	Filing date (day, month, year)

7
The answer must be 'No' if:
- any applicant is not an inventor
- the applicant is an inventor who is not an individual, or
- any applicant is a corporate body.

8
Please supply duplicates of claim(s), abstract, description and drawing(s).

Please mark correct box(es)

9
You or your appointed agent (see Rule 90 of the Patents Act 1990) must sign this request.

Please sign here →

A completed fee sheet should preferably accompany the fee.

7 Inventorship

7 Are you (the applicant or applicants) the sole inventor or the joint inventors?

Please mark the correct box

Yes ☐ No ☒ →

A statement of Inventorship on Patents Form 7/77 will need to be filed (see Rule 15).

8 Checklist

8a Please fill in the number of sheets for each of the following types of document contained in this application.

5

Continuation sheets for this Patents Form 1/77

Claim(s)

Description

Abstract

Drawing(s)

8b Which of the following documents also accompanies the application?

Priority documents (please state how many)

Translation(s) of Priority documents (please state how many)

Patents Form 7/77 - Statement of Inventorship and Right to Grant (please state how many)

Patents Form 9/77 - Preliminary Examination/Search

Patents Form 10/77 - Request for Substantive Examination

9 Request

I/We request the grant of a patent on the basis of this application.

Signed

S. G. W. Hart-
Sykes & Howard

Date 14/04/1998

(day month year)

Please return the completed form, attachments and duplicates where requested, together with the prescribed fee to:

☐ The Comptroller
The Patent Office
Cardiff Road
NEWPORT
Gwent
NP9 1RH

The Comptroller
The Patent Office
25 Southampton Buildings
London
WC2A 1AY

IMPROVEMENTS IN FABRIC COMPOSITES

The present invention relates to an improved fabric composite strip, particularly though not exclusively for making up into a waistband, and to a method for manufacturing same, which is curved, i.e "tailored", rather than straight.

Curved waistbands are desirable for the manufacture of certain items of clothing where the waistband is to be sewn to a shaped garment top, but hitherto it has not been possible to manufacture such a curved waistband in a single piece - conventional methods include manufacturing the waistband from several, usually four to six separate pieces sewn together, which is clearly disadvantageous as regards labour and manufacturing costs.

It is therefore the aim of the present invention to provide an improved waistband, a fabric composite strip therefor, and a manufacturing method, which overcomes these disadvantages.

According to a first aspect of the present invention there is provided a fabric composite strip comprising an interlining strip of predetermined width defined by first and second edges, and a fabric backing material affixed thereto, the interlining strip having elasticity in the longitudinal direction, wherein the degree of elasticity of the interlining varies from the first to the second edge, such that the composite strip is curved.

In the case where the interlining strip is of the type wherein the elasticity is provided by a number of elastic, eg "LYCRA" (TM) threads running longitudinally, the variation in elasticity is preferably achieved by progressively removing some of the strands, such that the resultant degree of elasticity close to one of the edges is considerably different to that close to the other edge. Alternatively, the interlining could be specifically manufactured to have

different densities of such elastic threads across the width of the strip.

When the interlining is attached to the fabric backing material, typically by conventional fusing methods, the result is a composite strip which has a high degree of recovery at the uppermost edge of the interlining, and a low degree of recovery at the lowermost edge of the interlining.

During the process of attaching the composite strip to the shaped garment top, the strip is tensioned through a folding machine such that as the garment emits from the puller feed at the back of the machine the top "high recovery" edge of the resultant waistband recovers, i.e. reduces back to its relaxed length prior to tensioning, whilst the lowermost edge of the waistband, which conforms to the shape of the garment top, is unable to recover due to the low elasticity of the interlining in this region, and curvature results, giving a shaped waistband.

According to a second aspect of the present invention there is provided a waistband composed of a composite fabric strip according to the fourth paragraph hereof.

According to a third aspect of the present invention there is provided a method of manufacturing a fabric composite strip including an interlining strip of predetermined width defined by first and second edges, the method comprising affixing to said interlining strip a fabric backing material and including the further step of varying the degree of longitudinal elasticity of the interlining strip from the first to the second edge, such that the composite strip is curved.

Particular advantages ensue if the present invention if the fabric backing material is first subjected to the fabric treatment process described in Applicants' own PCT Patent Application published under number WO 94/28227, according to

which a woven fabric is subjected to heat and pressure such that the yarn strands substantially across the width of the fabric are forced closer together, thus imparting a degree of stretch into the fabric.

In the case where a fabric having very little or no elasticity is used as the backing material, this "pre-treatment" process imparts the necessary degree of stretch, whereas if the fabric used as the backing material has a high degree of stretch, eg "LYCRA" (TM) fabric, the pre-treatment reduces the resilience of the fabric to a level such that the desired result of the present invention is more satisfactorily achieved than would otherwise be the case.

An embodiment of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 illustrates the interlining with varying elasticity,

Figure 2 illustrates a composite strip ready for making up into a waistband, and

Figure 3 illustrates the finished waistband, attached to the top of a garment.

An interlining strip 10 of indeterminate length and a certain width as defined by upper and lower edges 14,16 is of the type which comprises essentially non-elastic vertical strands and elastic, eg "LYCRA" (TM) strands 15 running longitudinally. In conventional interlining of this type the elastic longitudinal strands are distributed evenly over the width of the strip, but in the preferred embodiment of the present invention the interlining strip these elastic strands have been progressively removed as illustrated in Figure 1, so that there are fewer strands towards the lower edge 16 and more strands towards the upper edge 14, resulting in an interlining strip which has

greater elasticity, i.e recovery in its upper region than in its lower region.

Referring now to Figure 2, (which illustrates the strip in a tensioned state, and hence straight) the interlining strip 10 is placed onto and fused with (by means of fusible adhesive, for example) a fabric backing material 12 cut to just over twice the width of the interlining strip, and the fabric 12 is then folded about fold lines 8, 9 and 11 to form a complete waistband 20. The folding process is preferably carried out simultaneously with the attachment (by sewing, for example) of the waistband 20 onto the upper edge of a garment 22, by feeding the composite, fused strip into a folding machine under tension. Upon exiting the puller feed at the back of the folding machine, the top of the waistband recovers due to the relatively high elasticity of the interlining in this region, whereas the bottom of the waistband is unable to recover due to the low elasticity of the interlining in this region, hence giving rise to a curved waistband as shown in Figure 3, which conforms to the shape of the upper edge of the garment.

As mentioned previously, where the backing fabric is completely rigid, or conversely is of high elasticity, such as is the case for fabrics containing "LYCRA" (TM), the fabric backing 12 is preferably pre-treated with a high temperature compressive shrinking process (as described in WO 94/28227) in order either to impart a degree of elasticity, or conversely to stabilise the inherent high elasticity, thus contributing to improved performance of the present invention.

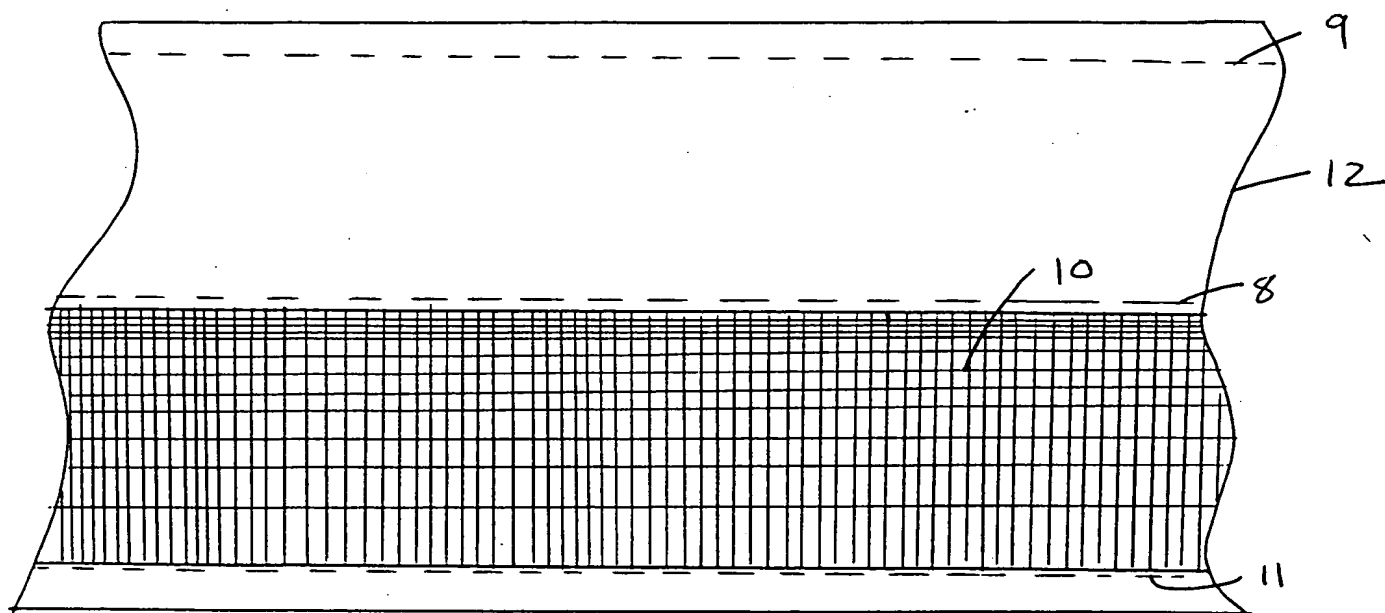
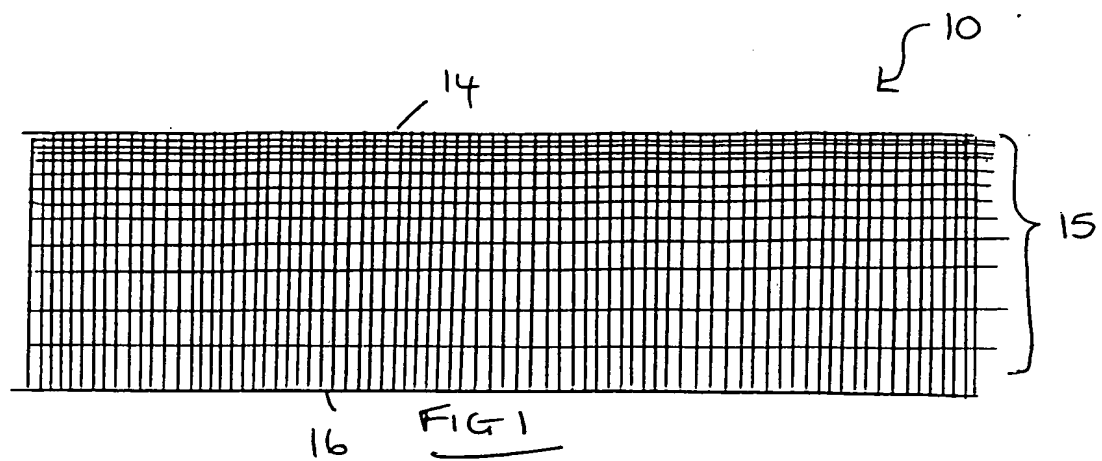


FIG 2

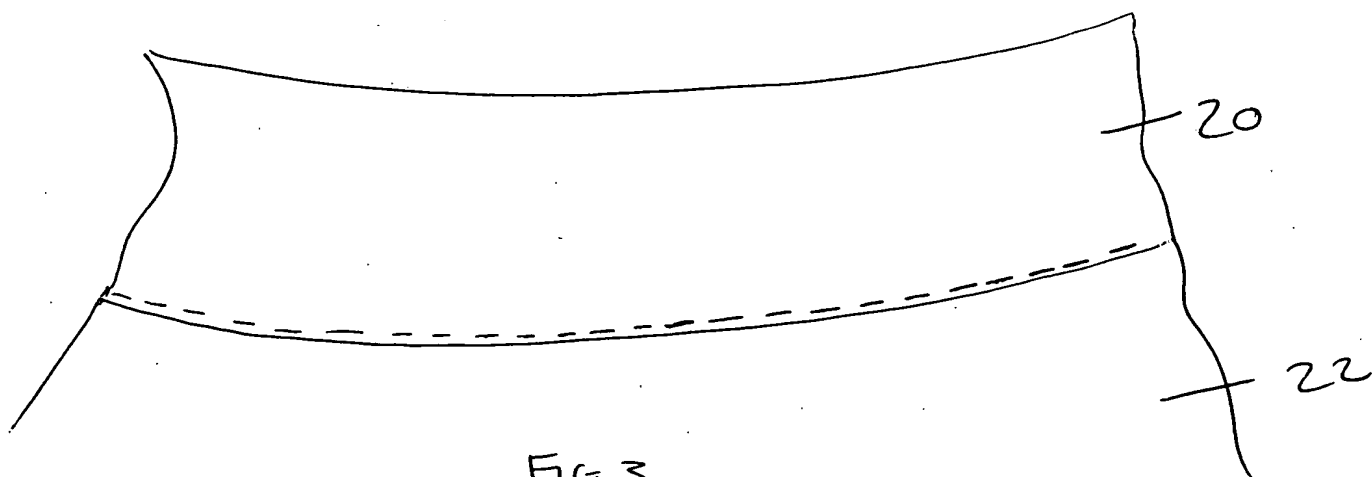


FIG 3

INTERNATIONAL SEARCH REPORT

Internat. Application No

PCT/GB 99/01146

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A41D27/06 A41B3/10 A41F9/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A41D A41B A41F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 720 874 A (QUICK SERVICE TEXTILES INC.) 26 January 1988 (1988-01-26) column 1, line 53 - line 64 column 2, line 56 - column 4, line 8; claim 1; figures 1-6 ---	1-4, 6, 10, 11
X	US 2 106 334 A (UNITES STATES RUBBER PRODUCTS) 25 January 1938 (1938-01-25) page 2, line 16 - line 57; claim 1; figures 1-6 ---	1-4, 6, 10, 11
X	US 3 745 588 A (JACK WINTER INC.) 17 July 1973 (1973-07-17) column 2, line 53 - column 4, line 22; figures 1,5,6 --- -/--	1, 2, 4, 11, 13, 14

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

29 July 1999

Date of mailing of the international search report

13/08/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Garnier, F

INTERNATIONAL SEARCH REPORT

Internat. Application No

PCT/GB 99/01146

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 21 06 283 A (H. BARIG) 31 August 1972 (1972-08-31) claim 1; figures 1-3 ---	1,6,8,9
A	US 4 551 994 A (OLYMPIC NARROW FABRICS COMPANY) 12 November 1985 (1985-11-12) claims 1,3; figures 3-13 ---	1,4,6, 10,11
A	US 2 186 387 A (TRUBENIZING PROCESS CORPORATION) 9 January 1940 (1940-01-09) page 1, column 1, line 37 - page 2, column 1, line 27; claims 1,2; figures 1,2 -----	1,4,5

INTERNATIONAL SEARCH REPORT

Information on patent family members:

Internati Application No

PCT/GB 99/01146

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4720874 A	26-01-1988	NONE	
US 2106334 A	25-01-1938	NONE	
US 3745588 A	17-07-1973	NONE	
DE 2106283 A	31-08-1972	NONE	
US 4551994 A	12-11-1985	NONE	
US 2186387 A	09-01-1940	FR 799513 A GB 443870 A	15-06-1936